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NOTES ON FUNGICIDES AND A NEW SPRAYING PUMP.

BY B. T. GALLOWAY.

In connection with the papers found elsewhere in the JOURNAL, it would seem proper to say something in regard to the preparation of fungicides, particularly those recommended for use. The manner of preparing most of these, however, has been so fully described in former publications that we deem it unnecessary to repeat the descriptions here. We will say, in passing, that the circulars—Nos. 5 and 6 of the Section of Vegetable Pathology—containing this information will be forwarded to all those desiring to consult them.

Aside from the old and well established preventives and remedies, there are several new ones which we think it would be well to call attention to in order that they may be more fully tested. The first of these is a solution of copper acetate or verdigris, which was mentioned in Volume 5, Number IV, of the JOURNAL. It is prepared as follows:

Dissolve 3 pounds of powdered verdigris in 6 to 8 gallons of water and after standing for twenty-four hours dilute to 22 gallons. If desired the amount of verdigris may be increased to 4 pounds without injury to the plants.

This preparation being comparatively cheap and easily prepared, it would be well to test it for downy mildew and black-rot of the grape, making the applications as described for Bordeaux mixture and the other well-known preparations.

Another preparation which might be tried for downy mildew is made as follows:

Dissolve 5 pounds of alum in 3 or 4 gallons of boiling water, and then pour this solution into a half barrel or tub containing sufficient cold water to make 15 gallons. In another vessel dissolve 42 pounds of calcium chloride in 3 gallons of cold water. Finally, pour the calcium chloride solution slowly into the alum preparation, stirring constantly to effect a thorough mixing.

When the two solutions are mixed there is formed aluminium chloride, potassium sulphate, and calcium sulphate. It is claimed that the fungicidal property lies in the first, while the calcium sulphate facilitates its adhesiveness. The potassium sulphate is, as every one knows, a fertilizer and as it is washed from the leaves it enriches the soil.

In addition to what is said here the papers of Professor Goff and Professor Chester should be carefully consulted, as they contain several new and important suggestions in regard to the preparation and application of fungicides. For the benefit of those having in mind the treatment of plant diseases the coming season, we quote below the usual prices of the various chemicals used in the preparation of fungicides. The quotations are for 100-pound lots. In smaller quantities the prices will range from one-fifth to one-third higher, so that money will be saved

if farmers and fruit-growers will club together in making their purchases. Such an arrangement will also save considerable in the way of transportation expenses.

	Per pound.		Per pound.
Copper carbonate	\$0.60	Iron sulphate	\$0.02
Copper sulphate	.08	Flowers of sulphur	.04
Potassium sulphide	.25	Alum	.03½
Aqua ammonia (22 Beaumé)	.08	Calcium chloride	.06
Sodium hyposulphite	.03	Aluminium sulphate	.05
Copper acetate	.30	Lime per barrel	2.00

NEW SPRAYING PUMP.

Ever since the work of the Section was inaugurated there has been felt the need of a cheap, serviceable, and effective apparatus for spraying grapes and all the low-growing crops. Heretofore we have had to rely mainly upon machines imported from France; in fact, with but one exception, the only pumps that have given satisfaction in our vineyard work have been purchased abroad. The average fruit-grower can not afford to send to France for a machine that will cost him, laid down in this country, all the way from \$18 to \$25, nor can he pay \$21 for a pump made here, notwithstanding the fact that it is a most excellent machine and costs almost the selling price to manufacture it. In short, a knapsack pump, be it ever so serviceable, at \$21 or even \$18, is entirely beyond the reach of the average farmer, gardener, and fruit grower. Consequently he has to rely upon inferior machines, and, as a result, his treatments are frequently unsuccessful for the simple reason that the remedies are not properly applied.

We have had the matter of providing a cheap and serviceable knapsack pump under consideration for some time, and can now positively announce that the machine will be on the market in a few weeks. The pumps will be made in two or three styles, and as there will be no patent on them we hope manufacturers throughout the country will be able to offer them at about \$12, thus placing them within the reach of all.

PREVENTION OF SMUT IN OATS AND OTHER CEREALS.

By W. A. KELLERMAN AND W. T. SWINGLE.

The smuts of oats and other plants are minute vegetable parasites. They appropriate for their use the nourishment which the infected plant prepared for its own development, and in this way reduce its vitality or completely destroy the part attacked. The dark-colored powdery mass popularly called the smut is merely the mature fruit of the parasite, and consists of exceedingly minute reproductive bodies